

## “AUTO MONITORING OF APPLIANCES BY INTERNET”

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### ABSTRACT

Under the heading it is abbreviated as “Networked home appliance system using Bluetooth technology integrating appliance control/monitoring with Internet service”

Here the monitoring and controlling of home appliances can be done from anywhere with internet facility of service provider via mobile phone or desktop computer and high quality transceivers and Bluetooth or Zig Bee technology and other wireless technologies. There will be the need of hardware and software components which could be properly composed at the source point and destination for better results by which it establishes atomized scenario.

**Keywords:** Bluetooth; transceiver; embedded system; protocol; hardware; software; Zig Bee.

### INTRODUCTION:

Wireless technologies are becoming more and more popular around the world. Consumers appreciate the wireless lifestyle, relieving them of the well known “cable chaos” that tend to grow under their desk. Nowadays, the world would virtually stop if wireless communication suddenly became unavailable. Both our way of life and the global economy are highly dependent on the flow of information through wireless mediums like television and radio. Cell phones have become highly available during the last decade. [1]

New wireless technologies are introduced at an increasing rate. During the last few years the IEEE 802.11 [2] technologies have started to spread rapidly, enabling consumers to set up their own wireless networks. This constitutes an important change in how wireless communications are made available to consumers. Wireless networks are no longer provided by big corporations alone, they can just as well be implemented by individuals. Our society is becoming more and more dependent on wireless communications as new areas of use are introduced.

Today, advances in sensors, and microprocessors technology, both on hardware and software level, have enabled distributed implementation of sensor and control actions over sensor/actuators networks. If we connect such local sensors, private networks to global network (internet) additional features could be

exhibit. The monitored and controlled system could become accessible from almost anywhere. The process parameters data display, remote control, system testing and system reconfiguration could be done using standard browsers on workstation computers. That allows us to use large screens, menus, buttons, and on-line helps, instead of simple alphanumeric displays usually connected to such embedded devices. The bridge between distributed sensors on one side and other side could be embedded web servers. They are low cost devices which allow us to use standards network protocols like TCP/IP and HTTP [3]

### STRUCTURE OF CONCEPT:

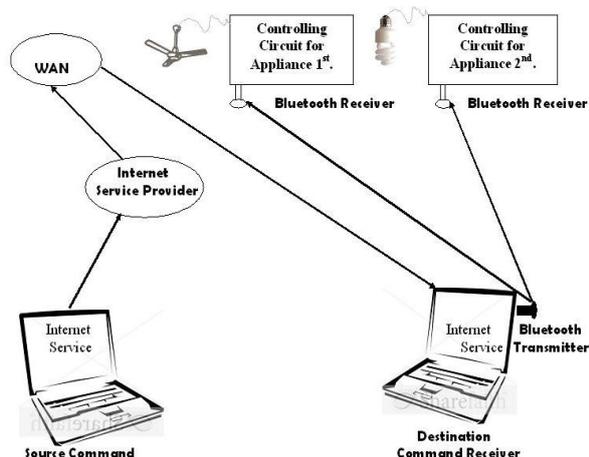
According to the structure provided in this paper, a person can handle (i.e. monitoring and controlling) of the home appliances by using the facility of internet. The source command provider can give the command to control the appliances at destination. Through the internet service then get transfer from source to destination via. Internet service provider and WAN.

After accepting the command or instruction, a Bluetooth device connected to the machine at destination will work as a transmitter of the signal and due to this the Bluetooth device fixed at the appliance control section will work as receiver simultaneously

Monitoring and control system based on simple 1-wire sensor local private network and embedded web servers are presented, detail

description of monitoring and control of the appliances.

## DIAGRAM:



## STEPS FOR CONNECTION OF BLUETOOTH WITH INTERNET:

- 1) First, let's open My Network Places by right-clicking in the icon and selecting Properties.
- 2) We want to change the properties for our connection to the internet. This is the adapter we want to share "from". Just right-click in the corresponding icon and select Properties.  
The Bluetooth Network adapter was automatically created during the Bluetooth installation.
- 3) There's a bug in Windows 2000 before SP3 where changing the sharing option may change IP configurations in this adapter. To make sure you're safe, we will note the current configuration.  
In the General tab select the Internet Protocol components and click Properties.
- 4) Write down all the information from the next dialog, and click Cancel.
- 5) Back in the Adapter properties, select the "Sharing" tab and tick "Enable Internet Connection Sharing for this connection".
- 6) Now, to configure the Bluetooth USB, right-click the Bluetooth icon in the system tray and selects Advanced Configuration.
- 7) Change to the Local Services tab and double click "Network Access".
- 8) Change the type of service to "Allow other devices to access the Internet/LAN via this computer".  
The alternative to this option will allow your device to connect to your computer as

part of a LAN, but will not have internet access.

Note the Configure Connection Sharing button: it'll open the configuration screens we've visited before. But some Bluetooth software will not have this button; hence I guided you through the other route.

- 9) Now, on your Pocket PC... Tap the Bluetooth icon the status bar and select Bluetooth Manager.
- 10) You'll see your notebook or desktop here, and if it's out of range a question mark. Tap the icon corresponding to your computer or notebook. If the computer does not show here, the devices are not paired! Go back and pair then.
- 11) Tap the Actions menu option.
- 12) Tap the "Connect to Network Access" option.
- 13) If all is ok, you'll see the message "Connected for Network Access".
- 14) Just start using your favorite programs... ICQ, Pocket Outlook, MSN Messenger, Pocket Internet Explorer.
- 15) If you tap the Bluetooth icon in the status bar again...
- 16) You'll see the computer or notebook is connected.
- 17) To disconnect, simply tap the connection icon in the status bar, and tap the Disconnect button.
- 18) To check your connection from the desktop or notebook, double-click My Bluetooth Places, and open My Device.
- 19) The icon in green show which Bluetooth profile is in use right now. Right-click My Network Access and select Properties to see its current status.

## BLUETOOTH:

The Bluetooth wireless technology is also spreading rapidly. The number of Bluetooth chipset shipped per year has doubled from 2002 to a total of 69 million chipset in 2003 [4]. Bluetooth applications become available, many consumers will already have Bluetooth devices and be ready to start using Bluetooth PANs (Personal Area Networks) where all their Bluetooth devices communicate with one another [5].

Bluetooth is an open standard for short range, low power, and low cost digital radio wireless communication [6]. The Bluetooth

receiver use unlicensed 2.4 GHz frequency band, with a nominal bandwidth of 1MHz for each channel. It offers an effective range of 10 meters (32 feet). Bluetooth can indeed be used in wireless sensors network for short range applications.

**Bluetooth communication** occurs between a master radio and a slave radio. Bluetooth radios are symmetric in that the same device may operate as a master and also the slave. Each radio has a 48-bit unique device address (BD\_ADDR) that is fixed.

Two or more radio devices together form ad-hoc networks called piconets. All units within a piconet share the same channel. Each piconet has one master device and one or more slaves. There may be up to seven active slaves at a time within a piconet. Thus, each active device within a piconet is identifiable by a 3-bit active device address. Inactive slaves in unconnected modes may continue to reside within the piconet.

## ZIG BEE

Zigbee is a relatively new, wireless personal area network technology based on IEEE 802.15.4, with a transmission range of 100+ meters [7]. ZigBee based communication devices consume very little power and hence the battery life of 1000+ days is common. ZigBee has enormous advantages compared to Bluetooth when used in wireless sensor networks. The reason includes more coverage area, less power consumption, and secure networking. ZigBee operates in the industrial, scientific and medical radio bands – 868 MHz in Europe, 915 MHz in the USA and 2.4 GHz in most other countries in the rest of the world.

## EMBEDDED SYSTEMS:

An **embedded system** is a special-purpose computer system designed to perform one or a few dedicated functions, often with real-time computing constraints. It is usually *embedded* as part of a complete device including hardware and mechanical parts.

In general, "embedded system" is not an exactly defined term, as many systems have some element of programmability. For example, Handheld computers share some elements with embedded systems — such as the operating systems and microprocessors which power them — but are not truly embedded systems, because

they allow different applications to be loaded and peripherals to be connected.

## EMBEDDED WEB SERVERS SYSTEM DESIGN:

Embedded system requires web server software that enhances their networking functionality without taking up vital system resources. Web enabling of devices is possible by adding web server software to existing embedded system. Requirements for embedded web servers are:

- Small memory footprint: server must use very little memory and it must not fragment memory. Many embedded devices use simple memory allocators that cannot manage memory effectively. This problem is usually solved by using statically allocate or preallocated memory blocks.

- Dynamic age generation: since the content of the pages served will be status information and Bluetooth reading part or all of the web pages will have to be generated on the fly.

- Reducing embedded web server capabilities to minimal set of necessary functions makes hardware requirements as well as energy consumption very small. Therefore dimensions and the price of the device are miniatures compared to the desktop PC with full functionality preserved at the same time.

### a) Protocols:

Although TCP/IP (Transmission Control Protocol/Internet Protocol) is the main communication protocol that enables connection of different devices in networks, it is not implemented in full. Only the necessary parts are used and parts that are not needed for this sort of communication are excluded. Furthermore, TCP/IP protocol is basis for upper level network protocols which will be used in embedded systems. If the system uses RS-232C or modem link then point to point (PPP) or serial line internet protocol (SLIP) is needed. File transfer protocol (FTP) is used for uploading new files and programs to the system. Opposite to the receiver driven information go through web browser, information flow could device driven. Using simple mail transfer protocol (SMTP) application can periodically send information via email.

### b) Software:

A minimal set of software for embedded internet system includes an operating system and

application software, an http server, a TCP/IP stack, and drivers for communication hardware. The use of internet allows the embedded system to offer substantial online capabilities without using system resources. With HTML pages pointing to other network locations, the system can offer more online documentation and richer graphics than the system hardware could otherwise support. In addition, supplying the raw data to more powerful “partner” on the network and presenting the results of “partner” calculations can virtually increase the system processing power. As we can see with clever programming and the use of internet, systems capabilities can be virtually increased to a higher level. The presence of embedded web server must not obstruct the systems primary real time operation in any way and therefore system response, must be compromised to main function.

The internet software should not be the limiting factor for the speed of data flow between the server and the browser. The HTML pages should not be burdened with extensive graphics. The presence too many graphical elements consume much more memory than text and therefore take much more time to download to browser. The page download time should be acceptable for the user, not longer than couple of seconds. [8]

### c) **Hardware:**

Hardware requirement result from the given selection of requirements and set of software to resolve those requirements. The minimal set up for network enabling of embedded systems includes 8 bit microprocessor, Ethernet and/or serial interface and enough memory to store and run applications. No I/O devices are needed since all these operations are managed through internet.

Further system improvements depend on desired system price and capabilities. These 8 bit devices can address up to 16 MB memory and often include hardware accelerated interpreters for high level language, which make them adequate for this purpose. Memory storage device such as hard disk device are defiantly optional and most of these devices will run software directly out of ROM or flash instated of loading it into RAM memory. This enables the system to boot in just a second or two as opposed to the minutes that a desktop Windows system can take.

### **Results:**

The connectivity between two internet terminals has been made by using the network service provided by the internet service provider. The compatibility between devices connected to both i.e. destination computer system and control circuit of appliances, has been made effective by using JAVA computer software language

### **Conclusion:**

After connectivity, the home appliances can be easily monitored by using Bluetooth and high quality transceiver embedded system. But in future it can be further modified and make faster by using Zig Bee technology.

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